

REMARKS

Claims 2-4 and 6-9 have been rejected under 35 U.S.C. §§ 102 and 103. The specification has been objected to under 35 U.S.C. § 132. Claim 5 has been objected to as being dependent on a rejected base claim.

In response, Applicants have amended the claims and specification herewith.

Claim 2 has been amended to recite that the mixing step (i) is conducted a temperature of 60°C or lower. Support for the amendment can be found, for example, on page 5, lines 15-16.

Claim 5 has been rewritten as an independent claim, reciting the subject matter of previously amended Claim 2.

In the specification, the second full paragraph on page 3 has been amended. Specifically, the term “acrylic” has been replaced with the word “acyclic” and the phrase “wherein the amino group is connected with a carbon atom and the carbon atom forms no ring” has been deleted.

Applicants have also added new Claims 10-12.

New Claims 10-11 depend from Claim 2 and further narrow the range of temperatures for mixing step (i). Support for new Claims 10 and 11 can be found, for example, on page 5, lines 15-17.

New Claim 12 is dependent on Claim 2 and recites the subject matter of previously amended Claim 5.

Upon entry of the above amendment, Claims 2-12 will be all the claims pending in the application.

Claim Rejections Under 35 U.S.C. §§ 102/103

Claims 2 and 3 have been rejected under 35 U.S.C. § 102 as being anticipated by Great Britain 427,339 ("GB '339").

Claims 2-4 and 6-9 have been rejected under 35 U.S.C. §§ 102/103 as being unpatentable over Japanese Patent No. 10-87345 ("JP '345").

a. Rejection of Claims 2 and 3 under GB '339

It is asserted that GB '339 teaches mixing acidic titanium chloride or sulfate solution with hexamethylenetetramine, an acyclic amine, to form titanium oxide which is then calcined.

Applicant's Response

Applicants respectfully assert that GB '339 fails to teach or suggest all of the elements recited in the claims.

The present invention is directed to a process for producing a titanium oxide. This process involves a mixing step (i) and a calcining step (ii). In the mixing step (i), an acidic solution of a titanium compound is mixed with a nitrogen-containing basic compound at a temperature of 60°C or less to obtain a reaction product. The reaction product is calcined in step (ii).

The claimed invention differs from process of GB '339 in that the acidic solution of a titanium compound is mixed with a nitrogen-containing basic organic compound at a temperature of 60 °C or lower. GB '339 teaches that the temperature during the mixing of the titanium compound and the nitrogen-containing basic compound should be 85°C. *See* GB '339,

page 2, lines 6-7. Therefore, GB'339 does not teach or suggest every element recited in the claims.

Furthermore, the purpose of the claimed invention differs from that of GB '339.

The present invention relates to a process for producing a titanium oxide which exhibits a high photocatalytic activity when irradiated with visible light. GB '339, however, relates to the manufacture of titanium compounds, such as titanium oxide, as well as pigments composed of titanium compounds. Therefore, there is no motivation for one skilled in the art to modify the process of GB '339 in order to produce a titanium oxide exhibiting a high photocatalytic activity by visible light radiation.

Accordingly, Applicants respectfully request that the anticipation rejection of Claims 2 and 3 be withdrawn.

b. Rejection of Claims 2-4 and 6-9 under JP '345

The Examiner alleges that JP teaches or suggests all of the limitations of Claims 2-4 and 6-9.

With respect to the anticipation rejection, it is asserted that JP '345 teaches the instantly claimed process of mixing an acidic titanium solution with an aromatic or aliphatic amine to form a reaction product, which is then calcined.

With respect to the alleged obviousness rejection, it is asserted that JP '345 suggests that the calcining step is conducted at a temperature greater than or equal to 400°C. It is further asserted that it would have been obvious to one ordinary skill in the art at the time the invention was made to select the portion of the overlapping range disclosed in the reference.

Applicant's Response

Applicants respectfully assert that JP '345 does not teach or suggest every element recited in the claims.

The presently-claimed process of producing titanium oxide differs from the process of JP '345 in that the compound to be mixed with the nitrogen-containing basic organic compound is patentably distinct from that which is presently claimed.

As discussed above, the process of the claimed invention comprises the step of mixing an acidic solution of a titanium compound with a nitrogen-containing basic organic compound to obtain a reaction product.

JP '345, on the other hand, is directed to a coating solution for forming a thin titanium oxide film. In preparing the coating solution, a titanium complex is reacted with aromatic and aliphatic amines in a 1-4C lower alcohol solvent. The resulting solution is heated and stirred until the titanium complex is dissolved. *See* JP '345, Paragraph [13].

The titanium complex can be obtained by mixing a suspension or solution of aminopolycarboxylic acid or its salt with a hydrochloric acid aqueous solution of titanium tetrachloride while introducing air. *See* JP '345, Paragraph [08]. Before the titanium complex is reacted with the amines in the alcohol, the titanium complex is washed and dried. *See* JP '345, Paragraph [08] and Examples.

Thus, the JP '345 process differs from the claimed invention since a nitrogen-containing basic organic compound of the claimed invention is not used in JP '345's process.

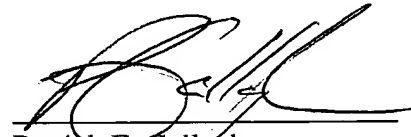
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Accordingly, Applicants respectfully request that the anticipation and obviousness rejections of Claims 2-4 and 6-9 be reconsidered and withdrawn.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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